



2019–2020 NTSB

MOST WANTED LIST OF TRANSPORTATION SAFETY IMPROVEMENTS



Reduce Fatigue-Related Accidents

What is the problem?

Flying an airplane requires complex human interaction and an operator's complete attention and proficient skill. Amateur and professional pilots, air traffic controllers, and maintenance personnel performing safety-critical functions are, however, all too often impaired by fatigue stemming from insufficient or poor-quality sleep.

Fatigue degrades a person's ability to stay awake, alert, and attentive to the demands of operating, directing, and maintaining a plane. Pilots and other aviation safety-critical personnel may not recognize the effects of fatigue until it's too late.

300+

Aviation
accidents
occurring in the
U.S. that have
been associated
with fatigue
since 1982

Fatigue is often the result of insufficient sleep. Even when individuals have enough time to get rest, other issues—such as medical conditions, living environment, unpredictable or inverted work schedules, and personal choices—can affect their ability to obtain quality sleep.

In the commercial aviation (airline) environment, duty-hour regulations mandate a prescribed number of hours a pilot must be off work or resting to avoid becoming fatigued. But other aviation personnel in safety-sensitive positions are not as closely

regulated. Although fatigue is part of the I'M SAFE checklist taught in flight training, general aviation pilots have no such restrictions on operating hours, and getting enough sleep is left to the pilot's discretion.

The traveling public is unknowingly and unwillingly at risk when a fatigued operator cannot safely execute his or her duties.



On August 14, 2013, UPS flight 1354 crashed short of runway 18 at Birmingham-Shuttlesworth International Airport. The captain and first officer died, and the airplane was destroyed by impact forces and postcrash fire. The NTSB determined the probable cause of this accident was the flight crew's continuation of an unstabilized approach and their failure to monitor the aircraft's altitude during the approach, which led to an inadvertent descent below the minimum approach altitude and subsequently into terrain. Contributing to the accident were the captain's performance deficiencies likely due to factors including, but not limited to distraction, confusion and fatigue. Also contributing was the first officer's fatigue due to acute sleep loss resulting from her ineffective off-duty time management and circadian factors.

Related reports:

AIR-18/01: Taxiway Overflight Air Canada Flight 759 Airbus A320-211, C-FKCK; San Francisco, California; July 7, 2017; Accident ID DCA17IA148

AAR-14/02: Crash During a Nighttime Nonprecision Instrument Approach to Landing, UPS Flight 1354; Birmingham, Alabama; August 14, 2013; Accident ID DCA13MA133

For detailed investigation reports, visit www.nts.gov

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What can be done?

Fatigue is a manageable threat to transportation safety that can be mitigated by a combination of science-based regulations, comprehensive fatigue risk management programs, and individual responsibility. We have issued more than 200 safety recommendations addressing fatigue-related problems across all modes of transportation.

50+

Aviation fatigue-related
recommendations issued
by the NTSB between
1972 and 2018

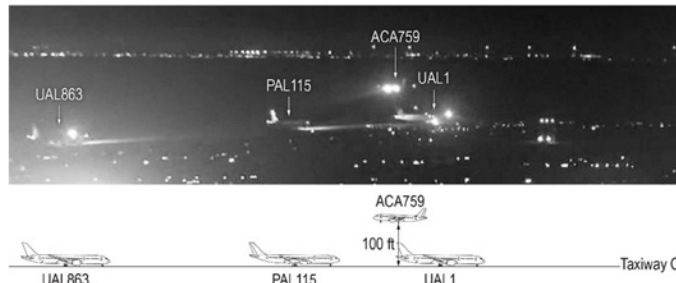
To address the problem of fatigue, the following actions should be taken:

Operators/Industry

- › Establish fatigue risk management programs and continually monitor their success to reduce risks for personnel performing safety-critical tasks. Fatigue risk management programs take a comprehensive, tailored approach to address the problem of fatigue within an industry or workplace. Such programs include policies or practices to address scheduling, attendance, education, medical screening and treatment, personal responsibility during nonwork periods, task and workload issues, rest environments, commuting, and napping.
- › Establish initial and recurrent training programs for maintenance and inspection personnel that include a review of the causes of human error, including fatigue, its effects on performance, and actions individuals can take to prevent it.

Regulators

- › Establish duty-time regulations for maintenance personnel working under Title 14 *Code of Federal Regulations (CFR)* Parts 121, 135, 145, and 91 subpart K that take into consideration factors such as start time, workload, shift changes, circadian rhythms, adequate rest time, and other factors shown by recent research, scientific evidence, and current industry experience to affect maintenance crew alertness.



On July 7, 2017, after being cleared to land, Air Canada flight 759 lined up with the wrong runway, descended to an altitude of 100 feet above ground level, and overflowed four air carrier airplanes, narrowly missing them. Contributing to the incident was the flight crew's fatigue due to circadian disruption and length of continued wakefulness.

- › Require that personnel performing maintenance or inspections under 14 *CFR* Parts 121, 135, 145, and 91 subpart K receive initial and recurrent training that includes a review of the causes of human error, including fatigue, its effects on performance, and actions individuals can take to prevent it.

Pilots, Mechanics, and Air Traffic Controllers

- › Get the proper amount of sleep. Recognize that adults need between 7 and 9 hours of sleep each night for optimal health and safety.
- › Talk to your doctor if you think you may have a health condition or use medicines that affect your alertness. Some medical conditions, such as obstructive sleep apnea (OSA), insomnia, and restless leg syndrome, may interfere with sleep and can lead to fatigue. Certain prescription and over-the-counter medicines can also cause drowsiness. In March 2015, the Federal Aviation Administration launched a major medical initiative to enhance OSA identification and encourage treatment. OSA screening is now mandatory for all pilots presenting for their medical examinations, and closely follows the American Academy of Sleep Medicine's clinical guidelines.

MWL
MOST WANTED LIST

Critical changes needed
to reduce transportation
accidents, injuries, and
fatalities

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NTSB National
Transportation
Safety Board

The NTSB **MOST WANTED LIST** highlights safety issues identified from the NTSB's accident investigations to increase awareness about the issues and promote recommended safety solutions.

For more information visit www.ntsb.gov/mostwanted or contact SafetyAdvocacy@ntsb.gov

The NTSB is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant accidents in other modes of transportation—railroad, highway, marine and pipeline. The NTSB determines the probable cause of the accidents and issues safety recommendations aimed at preventing future accidents. In addition, the NTSB carries out special studies concerning transportation safety and coordinates the resources of the federal government and other organizations to provide assistance to victims and their family members impacted by major transportation disasters.

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